

CLAIMS

1- "Sandwich Pipelines for Ultra-Deep Waters" comprised of a composite system with three or more superposed layers, characterized by one internal and external layer made of metallic alloys, such as carbon steel, stainless steel, aluminum, titanium, etc, and one intermediate layer made of cement, polypropylene, ceramic materials, polymers or composite materials with low thermal conductivity, high mechanical strength and good adherence with the internal and external pipes.

2- "Sandwich Pipelines for Ultra-Deep Waters" according to the claim 1, characterized by the utilization of carbon steel, preferably, in the manufacturing of the external and internal layers.

3- "Sandwich Pipelines for Ultra-Deep Waters" according to the claims 1 and 2, characterized by the utilization of cement, preferably, in the manufacturing of the intermediate layer.

4- "Sandwich Pipelines for Ultra-Deep Waters" according to the claims 1 and 2, characterized by the utilization of polypropylene, preferably, in the manufacturing of the intermediate layer.

5- "Sandwich Pipelines for Ultra-Deep Waters",

characterized by the utilization for the transportation of warmed hydrocarbons or fluids in ultra-deep waters.

6- "Sandwich Pipelines for Ultra-Deep Waters" according to the claim 1, characterized by attending concomitantly both the basic design requirements of mechanical strength and thermal insulation.